

**WHAT IS CLAIMED IS:**

1. A power spectral density (PSD) mask for spectral shaping of a dual bit map (DBM) mode downstream transmission, the PSD mask represented by an equation:

$$PSD_{DBMsOL} = K_{ADSL\_OL} \times \frac{C}{f_0} \times \frac{\left[ \sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left(\pi \frac{f}{f_0}\right)^2} \times \frac{1}{1 + \left(\frac{f}{f_{LP3dB}}\right)^{12}} \times \frac{1}{1 + \left(\frac{f_{HP3dB}}{f}\right)^6}, \quad 0 < f < \infty$$

- 5 where  $PSD_{DBMsOL}$  represents the PSD mask,  $K_{ADSL\_OL}$  represents a constant value,  $C$  represents a constant value,  $f$  represents a frequency of the downstream transmission,  $f_0$  represents a constant value,  $f_{LP3dB}$  represents a 3 decibel (dB) low pass frequency and  $f_{HP3dB}$  represents a 3 dB high pass frequency.
- 10 2. The PSD mask as in Claim 1, wherein  $K_{ADSL\_OL}$  has a value between 0.0900 watts and 0.1200 watts.
3. The PSD mask as in Claim 2, wherein  $K_{ADSL\_OL}$  has a value of 0.1104 watts.
- 15 4. The PSD mask as in Claim 1, wherein  $f_0$  has a value between 2.100 megahertz and 2.300 megahertz.
5. The PSD mask as in Claim 1, wherein  $f_0$  has a value of 2.208 megahertz.
- 20 6. The PSD mask as in Claim 1,  $f_{LP3dB}$  has a value substantially equal to  $\frac{f_0}{2}$ .
7. The PSD mask as in Claim 1, wherein  $f_{HP3dB}$  has a value between 100 kilohertz and 150 kilohertz.

8. The PSD mask as in Claim 1, wherein  $f_{HP3dB}$  has a value of 130 kilohertz.

9. The PSD mask as in Claim 1, wherein  $C$  has a value between 0.1 and 10.

5 10. The PSD mask as in Claim 7, wherein  $C$  has a value of 2.

11. The PSD mask as in Claim 10, wherein  $f_{HP3dB}$  has a value of 130 kilohertz.

12. The PSD mask as in Claim 11,  $f_{LP3dB}$  has a value substantially equal to  $\frac{f_0}{2}$ .

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13. The PSD mask as in Claim 12, wherein  $K_{ADSL\_OL}$  has a value of 0.1104 watts.

14. The PSD mask as in Claim 13, wherein  $f_0$  has a value of 2.208 megahertz.

15 15. A power spectral density (PSD) mask for spectral shaping of a far end cross talk (FEXT) bit map (FBM) mode downstream transmission, the PSD mask represented by an equation:

$$PSD_{FBMSOL} = K_{ADSL\_OL} \times \frac{C}{f_0} \times \frac{\left[ \sin\left(\pi \frac{f}{f_0}\right) \right]^2}{\left( \pi \frac{f}{f_0} \right)^2} \times \frac{1}{1 + \left( \frac{f}{f_{LP3dB}} \right)^{12}} \times \frac{1}{1 + \left( \frac{f_{HP3dB}}{f} \right)^8}, \quad 0 < f < \infty$$

where  $PSD_{FBMSOL}$  represents the PSD mask,  $K_{ADSL\_OL}$  represents a constant value,  $C$  represents a constant value,  $f$  represents a frequency of the downstream transmission,  $f_0$  represents a constant value,  $f_{LP3dB}$  represents a 3 decibel (dB) low pass frequency and  $f_{HP3dB}$  represents a 3 dB high pass frequency.

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16. The PSD mask as in Claim 15, wherein  $K_{ADSL\_OL}$  has a value between 0.0900 watts and 0.1200 watts.

17. The PSD mask as in Claim 16, wherein  $K_{ADSL\_OL}$  has a value of 0.1104 watts.

18. The PSD mask as in Claim 15, wherein  $f_0$  has a value between 2.100 megahertz and 2.300  
5 megahertz.

19. The PSD mask as in Claim 15, wherein  $f_0$  has a value of 2.208 megahertz.

20. The PSD mask as in Claim 15,  $f_{LP3dB}$  has a value substantially equal to  $\frac{f_0}{2}$ .  
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21. The PSD mask as in Claim 15, wherein  $f_{HP3dB}$  has a value between 27 kilohertz and 40  
kilohertz.

22. The PSD mask as in Claim 15, wherein  $f_{HP3dB}$  has a value of 32 kilohertz.  
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23. The PSD mask as in Claim 15, wherein  $C$  has a value between 0.1 and 10.

24. The PSD mask as in Claim 23, wherein  $C$  has a value of 2.

20 25. The PSD mask as in Claim 24, wherein  $f_{HP3dB}$  has a value of 32 kilohertz.

26. The PSD mask as in Claim 25,  $f_{LP3dB}$  has a value substantially equal to  $\frac{f_0}{2}$ .

27. The PSD mask as in Claim 26, wherein  $K_{ADSL\_OL}$  has a value of 0.1104 watts.  
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28. The PSD mask as in Claim 27, wherein  $f_0$  has a value of 2.208 megahertz.